

WHAT IS CLAIMED IS:

1. An image processing apparatus comprising:

quantization means for quantizing multi-valued
image data into N-valued data (where N is a natural
5 number), and outputting the N-valued data as a K-bit
code (where K is a natural number) that can express the
N values;

conversion means for combining and converting
K-bit codes for M pixels (where M is a natural number)
10 into an L-bit code (where $L < M \times K$); and

output means for packing and outputting data
output from said conversion means into data of a
predetermined bit unit.

2. The apparatus according to claim 1, wherein the
15 predetermined bit unit is a natural number multiple of
the L bits, and data of the predetermined data unit is
transferred to an image forming apparatus.

3. The apparatus according to claim 2, further
comprising control means for computing a memory size
20 that the image forming apparatus requires for a process,
and controlling said conversion means in accordance
with the computation result.

4. The apparatus according to claim 3, wherein said
control means controls said conversion means in a
25 through pass state when the computed memory size

required for the process is smaller than a memory size that the image forming apparatus can use.

5. The apparatus according to claim 1, wherein said quantization means and said conversion means execute
5 processes according to color components of the image data.

6. The apparatus according to claim 5, wherein said quantization means quantizes image data of a color
10 component in which a quantization error readily stands out to the N-valued data, and quantizes image data of a color component in which a quantization error hardly stands out to N'-valued data (where $N' < N$).

7. The apparatus according to claim 6, wherein said conversion means does not convert the image data of the
15 color component in which the quantization error hardly stands out.

8. An image processing method comprising the steps of:

quantizing multi-valued image data into N-valued
20 data (where N is a natural number), and outputting the N-valued data as a K-bit code (where K is a natural number) that can express the N-values;

combining and converting K-bit codes for M pixels
(where M is a natural number) into an L-bit code (where
25 $L < M \times K$); and

packing and outputting data output from the conversion step into data of a predetermined bit unit.

9. The method according to claim 8, wherein the predetermined bit unit is a natural number multiple of the L bits, and data of the predetermined data unit is transferred to an image forming apparatus.

10. The method according to claim 8, further comprising the step of computing a memory size that the image forming apparatus requires for a process, and controlling the conversion step in accordance with the computation result.

11. The method according to claim 10, wherein the control step includes the step of controlling the conversion step in a through pass state when the computed memory size required for the process is smaller than a memory size that the image forming apparatus can use.

12. The method according to claim 8, wherein the quantization step and the conversion step execute processes according to color components of the image data.

13. The method according to claim 12, wherein the quantization step includes the step of quantizing image data of a color component in which a quantization error readily stands out to the N-valued data, and quantizing image data of a color component in which a quantization

error hardly stands out to N' -valued data (where $N' < N$).

14. The method according to claim 13, wherein the conversion step includes the step of skipping
5 conversion of the image data of the color component in which the quantization error hardly stands out.

15. A computer program product comprising a computer readable medium having a computer program code, for an image processing method, comprising process procedure
10 code for:

quantizing multi-valued image data into N -valued data (where N is a natural number), and outputting the N -valued data as a K -bit code (where K is a natural number) that can express the N values;

15 combining and converting K -bit codes for M pixels (where M is a natural number) into an L -bit code (where $L < M \times K$); and

packing and outputting data output from the conversion step into data of a predetermined bit unit.